

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A resource management unit for managing one or a plurality of resources, comprising:

a first section that, upon accepting a tentative reservation request designating at least one resource, changes a state of a free time period of said designated resource to a tentatively reserved time period based on said tentative reservation request, if the designated resource has no previous tentative reservation request and has the free time period, said first section storing therein stores an expiration time information of said tentatively reserved time period indicating a valid time, during which said tentative reservation request is valid, and information of an issuer of said tentative reservation request;

a storage unit for storing ~~said another~~ tentative reservation request in a wait queue corresponding to said designated resource, if the previous another tentative reservation request designating the same resource and having previously said tentatively reserved the free time period exists and the expiration time of the previously tentatively reserved time period is not expired; and

a second section that generates information of said tentatively reserved time period and a corresponding tentative reservation ID corresponding in response to said tentative reservation request.

2. (currently amended): The resource management unit according to claim 1, wherein the tentative reservation request is accepted, the resource management unit further comprising:

a third section that, upon accepting a tentative reservation cancel request designating said tentative reservation ID, cancels said ~~tentatively~~tentative reserved~~reservation~~ time period to revive said free time period.

3. (currently amended): The resource management unit according to claim 1, wherein the tentative reservation request is accepted by the first section, the resource management unit further comprising:

a fourth section that, upon receiving a job reservation request designating said tentative reservation ID and requesting a reservation time period, changes said tentatively reserved time period to the reservation time period designated by said job reservation request to ~~be an~~ actually reserved for an execution of the job~~time period~~, if said reservation time period designated by said job reservation request is included in said ~~tentatively reserved~~ tentatively reserved time period corresponding to said designated tentative reservation ID and an~~a~~ issuer of said job reservation request matches with said issuer of said tentative reservation request.

4. (currently amended): The resource management unit according to claim 12, wherein the tentative reservation request is stored in the wait queue, the resource management unit further comprising:

a fifth section that cancels said previously tentatively reserved time period for which said expiration ~~tentatively reserved~~ time ~~period~~ has expired to thereby revive said free time period;

a sixth section that reads out said tentative reservation request stored in said wait queue, ~~said sixth section changing reserves~~ said free time period revived by said fifth section to ~~another~~ a newly tentatively reserved time period based on said read-out tentative reservation request, ~~said sixth section storing and stores~~ information of an issuer of said read-out tentative reservation request; and

a seventh section that provides information of~~issues~~ said newly another~~tentatively~~ reserved time period reserved~~changed~~ by said sixth section and a corresponding tentative reservation ID to the issuer of said read-out tentative reservation request.

5. (currently amended): A job scheduler communicating~~communicated~~ with at least one resource management unit for scheduling a job, said job scheduler~~controller~~ comprising:

a computer which controls operation of:

a first member that issues a tentative reservation request designating each resource~~resources~~ of a plurality of resources to be used in a job, to the~~a~~ resource management unit managing said each resource~~resource~~;

a second member that receives a notification in response to said tentative reservation request, the notification indicating either a tentatively reserved state of said each resource~~resource~~, wherein a free time period of the designated resource is tentatively reserved for the tentative reservation request and an expiration time for the tentatively reserved time is generated, which expiration time indicates a valid time when the tentative reservation request is valid, or indicating storage of said tentative reservation request in a wait queue, wherein the free time period of the designated resource is not tentatively reserved;

a third member that assigns the job to at least one first resource among the plurality of resources, for which said tentatively reserved state is received, while excluding at least one second resource among said plurality of resources, for which the tentatively reserved state is received, to create a job schedule including an execution time period of said job for each of said at least one first resource, and stores the job schedule in a storage unit;

a fourth member that issues a job reservation request for said first resource, to said resource management unit managing said at least one first resource; and

a fifth member that issues a tentative reservation cancel request for said at least one second resource, to said resource management unit managing said at least one second resource.

6. (currently amended): The job scheduler according to claim 5, further comprising:

a sixth member that, after receiving ~~a~~the notification of storage of said tentative reservation request in said wait queue from said resource management unit, controls said third member to create said job schedule either after a designated time interval elapsed since receiving said notification of the storage without a further notification, or after receiving another notification indicating that said tentative reservation request is ~~taken out~~obtained from ~~of~~ said wait queue and a state of the designated resource is changed to said tentatively reserved state for the obtained tentative reservation request.

7. (currently amended): A distributed resource management system comprising:

a computer which controls operation of:

at least one resource management unit, which manages a plurality of resources, ~~each of~~ ~~said resource management unit~~ comprising:

a first section that, upon accepting a tentative reservation request designating at least one resource, changes a state of a free time period of said designated resource to a tentatively reserved time period based on said tentative reservation request, if the designated resource has no previous tentative reservation request and has the free time period, ~~said first section storing therein stores an expiration time information~~ of said tentatively reserved time period indicating a valid time, during which said tentative reservation request is valid, and information of an issuer of said tentative reservation request;

a storage unit for storing ~~said another~~ tentative reservation request in a wait queue corresponding to said designated resource, if the previous ~~another~~ tentative reservation request designating the same resource and having previously said tentatively reserved free time period exists and the expiration time of the previously tentatively reserved time period is not expired;

a second section that generates information of said tentatively reserved time period and a corresponding tentative reservation ID in response to said tentative reservation request; and

a job scheduler ~~communicated~~ communicating with said resource management unit, said job scheduler comprising:

a first member that issues the ~~a~~ tentative reservation request designating ~~each resource~~ resources of the a plurality of resources to be used in a job, to said resource management unit ~~managing said each resource~~;

a second member that receives information of a tentatively reserved state of said ~~each resource~~ resources from said resource management unit, if the resources are tentatively reserved;

a third member that assigns the job to at least one first resource, for which said tentatively reserved state is received, and which is selected from ~~among~~ said plurality of resources, while excluding at least one second resource, for which said tentatively reserved state is received, among said plurality of resources, to create a job schedule including an execution time period of ~~each of~~ said first resource, and stores the job schedule in a storage unit;

a fourth member that issues a job reservation request for said first resource, to said resource management unit ~~managing said first resource~~; and

a fifth member that issues a tentative reservation cancel request for said second resource, to said resource management unit ~~managing said second resource~~.

8. (currently amended): A distributed resource management system comprising:

a computer which controls operation of:

at least one resource management unit that manages one or a plurality of resources; and

at least one job scheduler ~~communicated~~ communicating with said at least one resource management unit, said job scheduler having a job reservation function ~~including for~~ issuing a

tentative reservation request and a job reservation request for the plurality of resources to be used in a job,

said resource management unit comprising:

a first section that receives ~~at least one of a~~ said tentative reservation request and ~~a~~ the job reservation request, issued by said job scheduler, wherein:

~~said~~ tentative reservation is a combinational operation of acquiring a reservation state of resources and ~~trying to tentatively reserving~~ reserve the resources; and is performed by designating at least one resource ~~managed and~~ reserving a tentatively reserved time period within a free time period of the designated resource ~~by said resource management unit;~~ and

job reservation includes an operation of reserving the resources in advance for an execution of the job and is performed via the job reservation request designating the at least one resource and reserving an execution time period in the resource;

a second section that, if ~~the~~ a resource, for which said tentative reservation request is received, ~~from said job scheduler~~ does not have another tentative reservation request and has ~~the~~ a free time period ~~thereof~~, sets a tentatively reserved state for said resource and generates information of said tentatively reserved state including ~~the~~ a tentatively reserved time period set within the free time period, in response to said tentative reservation request;

a third section that stores, in a storage unit, an expiration time ~~a validity of the tentatively reserved time period~~ indicating a valid time, during which said tentative reservation request is valid, and information of said job scheduler having issued said tentative reservation request ~~in connection with said tentatively reserved time period, wherein said job reservation includes an operation of reserving resources in advance for execution of a designated job and is performed via a job reservation request designating at least one resource that is managed by said resource management unit and a time period of said resource to be reserved;~~

a fourth section that accepts said job reservation request and changes the tentatively reserved time period to the execution time period ~~be reserved~~ specified by said job reservation request to be reserved for the execution of the a job reserved state, if the specified execution time period is included in the a tentatively reserved tentatively reserved time period and the issuer of said job reservation request matches with the issuer of the tentative reservation request; and

a fifth section that, when ~~it reaches~~ a start time specified by the job reservation request is reached, controls to allocate the resource for the execution of the job and/or, when ~~it reaches~~ an end time specified by said job reservation request is reached, controls to release allocation of the resource from ~~to~~ the job.

9. (currently amended): The distributed resource management system according to claim 8, wherein said resource management unit accepts ~~two kinds of~~ cancel requests including a tentative reservation cancel request and a job cancel request issued corresponding to said tentative reservation request and two kinds of the job reservation- request ~~requests~~ issued by said job scheduler.

10. (currently amended): The distributed resource management system according to claim 8, further comprising at least one user terminal communicating ~~communicated~~ with said job scheduler for inputting through said user terminal the ~~a~~ job to said job scheduler, wherein said job scheduler comprises a first member that assigns said job input through said user terminal to the resources including at least one of:

a process of issuing the ~~a~~ tentative reservation request to said resource management unit;
a process of creating an execution schedule of the job for the resources for which said tentative reservation was successful; and

a process of issuing the ~~a~~ job reservation request according to said execution schedule to said resource management unit.

11. (currently amended): The distributed resource management system according to claim 8, wherein said resource management unit comprises:

a schedule storage unit that stores, for each resource managed by said resource management unit, information of said job designating said resources ~~each resource~~ and the execution time period for which ~~said~~ each resource is reserved;

a tentative-reservation-request storage unit that has a wait queue for each resource managed by said resource management unit, wherein a waiting tentative reservation request for said resource is stored in said wait queue;

a tentative-reservation-request receiving section that receives the ~~a~~ tentative reservation request from said job scheduler and stores information of the tentative reservation request in said schedule storage unit or said tentative-reservation-request storage unit;

a job-reservation-request receiving section that receives the ~~a~~ job reservation request from said job scheduler and stores information of the job reservation request in said schedule storage unit; and

a schedule management section that monitors the information of the job reservation request and the tentative reservation request stored in said schedule storage unit and performs at least one of allocating allocation and releasing release of the resources; and and/or discard discarding of said tentative reservation request according to the information of said job reservation request and said tentative reservation request.

12. (currently amended): The distributed resource management system according to claim 11, wherein said resource management unit comprises:

a tentative-reservation-cancel-request receiving section that receives a tentative reservation cancel request from said job scheduler and discards information of a corresponding

tentative reservation request from said schedule storage unit or said tentative-reservation-request storage unit; and

a job-cancel-request receiving section that receives a job reservation cancel request from said job scheduler and discards information of a corresponding job reservation request from said schedule storage unit and releases the resources allocated to the job.

13. (currently amended): The distributed resource management system according to claim 810, wherein said job scheduler comprises:

a waiting-job storage unit that temporarily stores information of thea job input through said user terminal;

a schedule storage unit that stores information of ~~a~~the job for which the job reservation request is confirmed for each resource;

a job-execution-request receiving member that receives a job execution request from said user terminal and stores contents of said job execution request in said waiting-job storage unit; and

a job scheduling member that ~~takes out~~ obtains thea job stored in said waiting-job storage unit and assigns the job to the resources, ~~said assignment of the job to resources~~ including ~~the~~ issuing of ~~the~~a tentative reservation request to said resource management unit, creating~~the~~ ~~creation of a~~ the job execution schedule, and issuing of ~~a~~ the job reservation request to said resource management unit.

14. (currently amended): The distributed resource management system according to claim 13, wherein said job scheduler comprises:

a job-cancel-request receiving member that, upon receiving a job cancel request from said user terminal, discards ~~a waiting~~ the job stored in said waiting-job storage unit or a

corresponding job registered in said schedule storage unit, and issues a job reservation cancel request to said resource management unit.

15. (currently amended): The distributed resource management system according to claim 8, wherein said resource management unit further comprises:

a sixth section that assigns the resources ~~managed by said resource management unit~~ for the execution of said job according to the a job reservation request received from said job scheduler; and

a seventh section that, upon receiving a new tentative reservation request for ~~previously already~~, tentatively reserved resources, stores said new tentative reservation request in a wait queue provided for each of the resources, wherein when a previous tentative reservation request is discarded due to a tentative reservation cancel request or a lapse of the expiration of time indicating the a validity of the time period tentatively reserved for the previous tentative reservation request, ~~a the new~~ tentative reservation request directed to the same resource as the discarded tentative reservation request is ~~taken out~~ obtained from ~~of~~ the wait queue, and becomes a valid tentative reservation request,

an eighth section that, when the new tentative reservation request is ~~taken out~~ obtained from ~~of~~ said wait queue, issues a notification of said valid tentative reservation request to said job scheduler having issued said new tentative reservation request,

said job scheduler further comprising:

a first member that controls such that, when the new tentative reservation request issued by said job scheduler has entered said wait queue, creation of the job execution schedule waits until said new tentative reservation request becomes valid and then starts the creation of the ~~job an~~ execution schedule ~~thereof~~.

16. (currently amended): The distributed resource management system according to claim 14, wherein said first member of said job scheduler further controls such that, if the new tentative reservation request does not become valid ~~for the tentative reservation request~~ in a predetermined time interval ~~until, the process proceeds to said creation of said job execution schedule~~ is created while excepting the resource corresponding to the new tentative reservation request stored in said wait queue.

17. (currently amended): A method for use in a resource management unit that manages one or a plurality of resources, the method comprising:

accepting a tentative reservation request designating at least one resource if the designated resource has no previous tentative reservation request and has a free time period;

changing a state of the free time period of said designated resource to a tentatively reserved time period based on said tentative reservation request;

storing an expiration time of said tentatively reserved time period indicating a valid time, during which said tentative reservation request is valid, and information of an issuer of said tentative reservation request;

storing ~~said another~~ tentative reservation request in a wait queue corresponding to said designated resource, if the another tentative reservation request designating the same resource and having previously said tentatively reserved the free time period exists and the expiration time of the previously tentatively reserved time period is not expired; and

generating information of said tentatively reserved time period and a corresponding tentative reservation ID ~~in response~~ corresponding to said tentative reservation request.

18. (currently amended): The method according to claim 17, wherein the tentative reservation request is accepted, the method further comprising ~~the step of:~~

~~upon~~ accepting a tentative reservation cancel request designating said tentative reservation ID; and

canceling said ~~tentatively reserved tentative reservation~~ time period to revive said free time period.

19. (currently amended): The method according to claim 17, wherein the tentative reservation request is accepted, the method further comprising ~~the step of~~:

~~upon~~ receiving a job reservation request designating said tentative reservation ID and a reservation time period;

changing the tentatively reserved time period to said reservation time period designated by said job reservation request to ~~be an~~ actually reserved for an execution of the job period, if said reservation time period designated by said job reservation request is included in said ~~tentatively reserved~~ tentatively reserved time period corresponding to said designated tentative reservation ID and ~~an~~ issuer of said job reservation request matches with said issuer of said tentative reservation request.

20. (currently amended): The method according to claim 17, wherein the tentative reservation request is stored, the method further comprising ~~the steps of~~:

canceling said previously tentatively reserved time period for which said expiration validity time period has expired to revive said free time period;

reading out said tentative reservation request stored in said wait queue,

changing the state of said revived free time period ~~revived by said fifth section to another~~ a newly tentatively reserved time period based on said read-out tentative reservation request,

storing information of an issuer of said read-out tentative reservation request; and

~~providing information about~~issuing said ~~newly another~~ tentatively reserved time period ~~changed by said changing step~~ and a corresponding tentative reservation ID to the issuer of said read-out tentative reservation request.

21. (currently amended): A method for use in a job scheduler,
~~communicating~~~~communicated~~ with one or a plurality of resource management units, for scheduling a job, said method comprising:

issuing at least one tentative reservation request designating resources from a plurality of ~~said~~ resources to be used in the job to at least one resource management unit managing said plurality of said resources;

receiving a notification in response to said tentative reservation request, the notification ~~request indicating~~ identifying either a tentatively reserved state of said each resource ~~resource~~, wherein free time periods of the designated resources are tentatively reserved for the tentative reservation request and an expiration time of the tentatively reserved time periods is generated, which expiration time indicates a valid time when the tentative reservation request is valid, or ~~the~~ ~~indicating~~ storage of said tentative reservation request in a wait queue, wherein the free time periods of the designated resources are not tentatively reserved;

assigning the job to at least one first resource among the plurality of resources, for which said tentatively reserved state is received, while excluding at least one second resource among said plurality of resources, for which said tentatively reserved state is received, to create a job schedule including an execution time period of said job for ~~each of~~ said at least one first resource;

issuing a job reservation request for said first resource, to said resource management unit ~~managing said at least one first resource;~~ and

issuing a tentative reservation cancel request for said at least one second resource, to said resource management unit ~~managing said at least one second resource.~~

22. (currently amended): The method according to claim 21, further comprising ~~the step of:~~

~~creating~~controlling, after receiving ~~the~~ notification of storage of said tentative reservation request in said wait queue from said resource management unit, ~~said third member to create~~ said job schedule either after a designated time interval elapsed since receiving said notification without a further notification, or after receiving another notification indicating that said tentative reservation request is obtained from~~taken out of~~ said wait queue and to said tentatively reserved state is generated for the obtained tentative reservation request.

23. (currently amended): A method for use in a distributed resource management system including at least one resource management unit for managing at least one resource and at least one job scheduler ~~communicating~~communicated with said resource management unit, ~~having a job reservation function including issuing a tentative reservation request for reserving a plurality of resources to be used in a job, said method comprising:~~

receiving ~~at least one of~~ a tentative reservation request and a job reservation request, issued by said job scheduler, wherein: ~~said~~

tentative reservation is a combinational operation of acquiring a reservation state of the resources and ~~trying to~~ tentatively reserving the~~reserve~~ resources; and is performed by designating at least one resource ~~managed by said resource management unit~~ and reserving a tentatively reserved time period within a free time period of the designated resource, and

job reservation includes reserving the resources in advance for an execution of the job and is performed via the job reservation request designating the at least one resource and reserving an execution time period in the resource;

setting in said resource management unit a tentatively reserved state for said resource and ~~generates reserving said tentatively reserved state including a~~ the tentatively reserved time period in response to said tentative reservation request, if ~~thea~~ resource, for which said tentative reservation request is received, ~~from said job scheduler~~ does not have another tentative reservation request and has ~~thea~~ free time period ~~thereof~~;

storing in said resource management unit an expiration time ~~a validity time period of the tentatively reserved time period indicating a valid time, during which the tentative reservation request is valid~~, and information of said job scheduler having issued said tentative reservation request ~~in connection with said tentatively reserved time period, wherein said job reservation includes an operation of reserving resources in advance for execution of a designated job and is performed via a job reservation request designating at least one resource that is managed by said resource management unit and a time period of said resource to be reserved~~;

accepting, by said resource management unit, said job reservation request and changing the tentatively reserved time period ~~to be reserved~~ the execution time period designated by said job reservation request ~~to be reserved for an execution of the a job-reserved state~~, if the designated execution time period is included in ~~a tentatively reserved~~ the tentatively reserved time period and ~~an~~ the issuer of said job reservation request matches with the issuer of the tentative reservation request; and

controlling to allocate the resource for the execution of the job, when ~~it reaches~~ a start time designated by the job reservation request is reached, ~~and~~ and/or to release allocation of the resource ~~from~~ to the job, when ~~it reaches~~ an end time designated by said job reservation request is reached.

24. (currently amended): The method according to claim 23, wherein said resource management unit accepts ~~two kinds of~~ cancel requests including a tentative reservation cancel request and a job cancel request issued corresponding to said tentative reservation request and the job ~~two kinds of reservation request~~ requests issued by said job scheduler.

25. (currently amended): The method according to claim 23, further comprising ~~the step of assigning the a job to the resources by~~ in said job scheduler, said job being input from a user terminal to said job scheduler, said assigning ~~step comprising the steps of:~~

issuing ~~the~~ a tentative reservation request to said resource management unit;

creating an execution schedule of the job for the resources for which said tentative reservation was successful; and

issuing ~~a~~ the job reservation request according to said execution schedule to said resource management unit.

26. (currently amended): The method according to claim 23, further comprising, ~~upon receiving said tentative reservation request in said resource management unit, the steps of:~~

upon receiving the tentative reservation request in the resource management unit, storing information of a corresponding tentative reservation request in a schedule storage unit or in a wait queue provided in said resource management unit for each of said resources;

upon receiving said job reservation request in said resource management unit, storing information of a corresponding job reservation request in said schedule storage unit; and

monitoring the information of said job reservation request and said tentative reservation request, to perform one of allocating and releasing allocation and release of the resources, and/or discard discarding said tentative reservation request based on the information of said job reservation request and said tentative reservation request.

27. (currently amended): The method according to claim 23, further comprising at least one ~~the steps of:~~

receiving a tentative reservation cancel request in said resource management unit from said job scheduler to discard information of a corresponding tentative reservation request from said schedule storage unit or said wait queue; and

receiving a job reservation cancel request from said job scheduler to discard information of a corresponding job reservation request from said schedule storage unit and release resources allocated to the job.

28. (currently amended): The method according to claim 23, further comprising ~~the steps of:~~

receiving a job execution request from said user terminal to store contents of a corresponding job in said job scheduler; ~~and~~

creating a job schedule corresponding to said job execution request in said job scheduler; and;

~~wherein said assigning assignment of the job to the resources including the issuing of thea tentative reservation request to said resource management unit, creating the creation of a job execution schedule, and the issuing of thea job reservation request to said resource management unit.~~

29. (currently amended): The method according to claim 28, further comprising, ~~upon receiving a job cancel request from said user terminal in said job scheduler, the steps of:~~

upon receiving a job cancel request from said user terminal in the job scheduler, discarding in said job scheduler ~~a waiting the~~ job stored in a waiting job storage unit or a corresponding job registered in said schedule storage unit; and

issuing a job reservation cancel request from said job scheduler to said resource management unit.

30. (currently amended): The method according to claim 23, further comprising ~~the~~
~~steps of:~~

allocating the resources ~~managed by said resource management unit~~ to an execution of
said job according to the job reservation request received from said job scheduler;

upon receiving a new tentative reservation request for ~~previously already~~, tentatively
reserved resources by a previous tentative reservation request, storing said new tentative
reservation request in a wait queue provided for each of the resources, wherein when the
~~previous~~ tentative reservation request is discarded due to a tentative reservation cancel request
or a lapse of the expiration time of a tentatively reserved validity-time period for the previous
tentative reservation request, the new tentative reservation request directed to the same resource
as the discarded tentative reservation request is ~~taken out~~obtained from ~~of~~ the wait queue, and
becomes a valid tentative reservation request,

upon the new tentative reservation request being ~~taken out~~obtained from ~~of~~ said wait
queue, issuing a notification of said valid tentative reservation request from said resource
management unit to said job scheduler having issued said new tentative reservation request;

controlling ~~in~~ said job scheduler such that, when the new tentative reservation request
~~issued by said job scheduler has entered~~enters said wait queue, creation of a job execution
schedule waits until said new tentative reservation request becomes the valid tentative
reservation request and then starts the creation of the job ~~an~~ execution schedule ~~thereof~~.

31. (currently amended): The method according to claim 30, further comprising ~~the step~~
~~of:~~

~~at the end of the predetermined time period~~, ignoring the new tentative reservation
request stored in said wait queue and proceeding to the creation of the job ~~an~~ execution schedule,
if the new tentative reservation request does not become valid in a predetermined time period.

32. (currently amended): A distributed resource management system comprising:

a resource management unit for managing ~~at least one resource~~ resources;

a job scheduler ~~communicating~~communicated with said resource management unit to schedule a job to use said resources; and

a user terminal ~~communicating~~communicated with said job scheduler for ~~consecutively~~ issuing a first tentative reservation request ~~prior to issuing~~and a job reservation request for ~~each~~ said resource resources, to said resource management unit;

said resource management unit comprising:

a first section that receives said first tentative reservation request from said job scheduler to set a state of the resource designated by said first tentative reservation request to ~~in~~ a tentatively reserved state and tentatively reserve a free time period of the designated resource for the first tentative reservation, including setting an expiration time of the tentatively reserved time for the first tentative reservation request; and

a second section that, when a second tentative reservation request is issued for the resource previously~~an already~~, tentatively reserved for the first tentative reservation~~resource~~, stores the second tentative reservation request in a wait queue of a storage unit,

wherein said user terminal requests said job scheduler to execute the~~a~~ job, and ~~wherein~~

said job scheduler comprises a first member that, after issuing ~~a~~the first tentative reservation request to said resource management unit, determines the resources to which the job is assigned and issues the~~a~~ job reservation request to said resource management unit to reserve the resources ~~necessary~~ for an execution of the job.

33. (currently amended): A distributed resource management method for a distributed resource system including at least one resource management unit that manages one or a plurality

of resources;~~;~~ at least one job scheduler ~~communicating~~~~communicated~~ with said at least one resource management unit and ~~scheduling~~ ~~schedules~~ a job to use said resources;~~;~~ and at least one user terminal ~~communicating~~~~communicated~~ with said job scheduler, said method comprising ~~the steps of:~~

~~consecutively~~ issuing a first tentative reservation request prior to issuing ~~and~~ a job reservation request from said job scheduler for ~~each~~ said ~~resources~~ ~~resource~~ to said resource management unit;

tentatively reserving free time periods of the resources for the first tentative reservation
and storing an expiration time of the tentatively reserved time periods, which expiration time
indicates a valid time when the first tentative reservation request is valid;

issuing ~~after~~ a second tentative reservation request ~~is issued for previously~~ ~~an already,~~
tentatively reserved resource for the first tentative reservation, from by said job scheduler;~~;~~

storing said second tentative reservation request in a wait queue of said resource management unit; and

after issuing the first tentative reservation request to said resource management unit for ~~each~~ said ~~resources~~ ~~resource~~, said job scheduler determining the resources to which the job is assigned and issuing the a job reservation request to said resource management unit to reserve the resources ~~necessary~~ for an execution of the job.

34. (currently amended): A ~~program, embodied on a~~ computer readable medium storing
a program, which when, executed by ~~for running on~~ a computer constituting a resource management unit, which manages one or a plurality of resources, causes the computer to execute
a method ~~said program~~ comprising:

accepting a tentative reservation request designating at least one resource, if the
designated resource has no previous tentative reservation request and has at least one free time
period to be tentatively reserved for the tentative reservation request;

changing a state of the at least one free time period of said designated resource to a tentatively reserved time period;

storing information of an expiration time of said tentatively reserved time period indicating a valid time, during which said tentative reservation request is valid, and about an the issuer of said tentative reservation request in a storage unit;

storing ~~said another~~ tentative reservation request in a wait queue for said designated resource, if the previous another tentative reservation request designating the same resource and having the free time period tentatively reserved exists and the expiration time of said previously tentatively reserved time period is not expired; and

~~generating providing~~ information of said tentatively reserved time period and a corresponding tentative reservation ID ~~corresponding in response~~ to said tentative reservation request.

35. (currently amended): The ~~program medium~~ according to claim 34, wherein the tentative reservation request is accepted and the method further comprises ~~defining the step of:~~

~~upon~~ accepting a tentative reservation cancel request designating said tentative reservation ID_i;

canceling ~~a the~~ tentative reservation request corresponding to said tentative reservation ID_i and

~~to cancel releasing~~ said tentatively reserved time period to revive said free time period.

36. (currently amended): The ~~program medium~~ according to claim 34, wherein the tentative reservation request is accepted and the method further comprises ~~defining the steps of:~~

~~upon~~ receiving a job reservation request designating said tentative reservation ID and a request time period,

changing said ~~tentatively reserved time period to the~~ request time period designated by said job reservation request to ~~be reserved for an execution of the a job reserved time period~~, if said request time period is included in said ~~tentatively reserved~~ tentatively reserved time period corresponding to said tentative reservation ID and ~~an~~ the issuer of said job reservation request matches with the issuer of said tentative reservation request.

37. (currently amended): The ~~program~~ medium according to claim 34, wherein the tentative reservation request is stored in the wait queue and the method further comprises ~~defining the steps of:~~

canceling said ~~previously tentatively reserved~~ tentatively reserved time period for which said ~~validity expiration~~ time period has expired to revive said free time period;

~~taking obtaining the~~ a tentative reservation request ~~out of from~~ said wait queue;

changing a state of said revived free time period to ~~another~~ a newly tentatively reserved time period based on said ~~taken out~~ obtained tentative reservation request; ~~and~~

storing information identifying the issuer of said ~~taken out~~ obtained tentative reservation request in the storage unit; and

~~issuing providing~~ a notification of said ~~newly another~~ tentatively reserved time period and a tentative reservation ID corresponding to said ~~another~~ obtained tentative reservation ~~request~~ tentatively reserved time period to the issuer thereof.

38. (currently amended): A ~~program, embodied on a computer readable medium~~ storing a program, which, when executed by ~~for running on~~ a computer constituting a job scheduler, that is ~~communicating~~ communicated with a resource management unit, which manages one or a plurality of resources, causes the computer to execute a method ~~said program~~ comprising:

issuing a tentative reservation request for ~~each of the~~ resources to be used by a job, to said resource management unit ~~managing the resource~~;

tentatively reserving the resources including tentatively reserving free time periods of the resources, based on the tentative reservation request;

setting an expiration time of the tentatively reserved time periods;

selecting the resources to which said job is assigned from ~~among the~~ resources that are tentatively reserved by said resource management unit and reserving determining a an execution time period, for an execution of the job, within the tentatively reserved time periods for which the expiration time is not expired;

issuing a job reservation request for ~~each of the~~ resources selected determined by said selecting ~~step~~ to said resource management unit ~~managing said selected resource;~~ and

issuing a tentative reservation cancel request for at least one of the resources tentatively reserved by said tentative reservation request ~~issuing step~~, to said resource management unit ~~managing the resource.~~

39. (currently amended): The ~~program~~ medium according to claim 38, wherein the method further comprises defining the steps of:

~~upon~~ storing said tentative reservation request in a wait queue of said resource management unit; ~~and said job scheduler~~

controlling to proceed to said selecting ~~step~~ after a predetermined time period has elapsed or a notification of said tentative reservation request having been ~~taken out~~ obtained from ~~of~~ said wait queue has arrived.